DOCUMENT RESUME

ED 063 064 RC 006 137

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TITLE Education and Rural Development with Reference to Developing Countries.
INSTITUTION Macquarie Univ., North Ryde (Australia).
PUB DATE Apr 72
NOTE 56p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Adult Education; *Agricultural Education; Agricultural Production; Agricultural Skills; Agricultural Technicians; *Developing Nations; Economics; Educational Programs; Educational Resources; Living Standards; Management; Manpower Development; Needs; Policy; *Program Development; *Rural Development; *Rural Education; Teaching; Training; Vocational Agriculture

ABSTRACT

Seeking full use of the educational resources available to developing countries in the areas of rural education and agricultural training, this paper is concerned with ways in which the efforts of organizations and institutions concerned with rural development might be improved and expanded. A generalized critical analysis of different facets of rural education--primary and secondary education; vocational training centers; youth service (wherein youth are given the opportunity to work in return for food, clothing, shelter, and a few hours of education and training per week); government-sponsored farm (training) institutes; agricultural colleges; agricultural education at the universities; adult education; and teacher training--is given. Recommendations include change from a subsistence to a cash economy and increased agricultural output to the point of exportation; "gentle" innovation; formulation of a comprehensive rural-development policy aimed at raising living standards of the rural people through increased and diversified economic activity; coordination of activities through an executive governmental council which includes an experienced agricultural educationist and provides academic and advisory support through a university department of agricultural education; provision for manpower planning; and improvement of the status and role of rural teachers, trainers, and extension workers. (MJB)

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education and rural development

with reference to developing countries

RECEIVED
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G.M. COVERDALE

APRIL 1972

ED 063064

R 006137

EDUCATION AND
RURAL DEVELOPMENT
with reference to developing countries

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INTRODUCTION

The purpose of this paper is not confined to making a spirited case for a spectacular expansion of rural education and agricultural training in the developing countries where rural poverty is usually on a scale unenvisaged by the Western nations. This has been dealt with assiduously, persuasively and tenaciously by eminent planners, economists, sociologists, statisticians and other experts in their various fields, and there is little of value which could be added to their continuing recommendations. Their case has been proven a thousand times over. It is certainly no discredit to their efforts if their repeated warnings have not been heeded, nor prompt and positive action taken, by the Governments whom they have been advising. Never have they disguised the fact that, in this context, there is no easy row to hoe. There is no slick and easy solution to the problem of rural development, especially insofar as the contribution of education is concerned.

The majority of experts have made no extravagant claims that education per se is capable of pioneering rural change. Clearly, however, it is highly relevant to the problem, even if only because, in so many backward countries, somewhere in the region of 90 per cent of the population live in these rural areas deriving their meagre and often unbalanced subsistence therefrom. Many of these countries are striving to move towards free and compulsory education for all, at least to the conclusion of primary school. Education is not merely being offered either as a token of political generosity or as a belated social service. At this stage in a country's emergence, it is also very much an investment in national development, and therefore to be planned and evaluated accordingly - agricultural education no less than any other form of education.

It is quite fashionable to belittle the dividends likely to accrue from a substantial investment in agricultural education. Of course it does not help to find that in India over 80 per cent of its agricultural graduates are working in jobs which have nothing whatever to do with farming! Admittedly the past is strewn with the wreckage accumulated from a long history of mistakes and ill-conceived schemes! It is easy to feel disillusioned by the results of many rural community projects of a self-help nature; the difficulties become really apparent when it is a case of sustaining the projects, and one is forced to recognise the importance of material incentives as opposed to altruism and community-mindedness, except perhaps where there is the fervour of fierce nationalism. One has to accept the fact that there is jealousy and self-interest amongst the richer rural dwellers, and that the more typical peasant is characterised by his fatalism, lack of achievement, and reluctance to change his way of life.

It is beyond the scope of this paper to discuss in any detail the quality of rural life, even though the well-being of the countryside has much to do with the efficacy, or otherwise, of rural education programmes. It has to be conceded, however, that all too frequently the villager seems to prefer the familiar and the traditional. (These characteristics are not the monopoly of developing countries. Exactly the same climate prevails in the majority of advanced countries, especially in their poorer farming districts). I have tried in this paper to avoid the fatalistic philosophy that there are so many obstacles in the way of rural reconstruction that it belies all attempts at change. This is not to say that I think it is a simple and straightforward matter to precipitate change or that I think that rural education offers a prescription for miracles!

Throughout this paper, my concern has been with methodology and ways in which the efforts of organisations and institutions concerned with rural education might be improved and expanded. I have adopted something akin to a case-study approach, without any attempt to relate it to any specific country or continent. Inevitably, with such a broad approach, I am bound to be perpetually guilty of generalisations. (I do, in fact, realise that there are great differences between the problems of Central Africa, South-East Asia, and the Andes!). Equally, I am guilty of making numerous value-judgments, since much of my thinking is based upon personal experience in the field. I have attempted a critical analysis of the different facets of rural education and tried to offer some constructive suggestions.

I - PERSPECTIVE

"As a rule, in developing countries, 70-95% of all people live and work in the rural areas. And it is precisely here that the process of modernisation has thus far made its smallest imprint. Yet, if these countries are to pull their whole economy and society up by the bootstraps, the rural-agricultural sector, and not merely the more glamorous industrial-urban sector, is where the development process must be accelerated.

"It is in the rural areas also that education - hand in hand with other development - must make a vital contribution. The question then arises : how well do the educational systems of developing countries meet this hard test of fitness? In other words, what is their contribution to bringing agricultural and rural life toward the "take-off" point?" (Coombs, 1968 : 80, 81).

Philip J. Foster (1966 : 167) has this to say:-

"No amount of technical vocational or agricultural instruction taken alone within the formal educational system is going to check the movement from the rural areas, reduce the volume of unemployment, or indeed necessarily have any effect, in itself, on the rate of economic growth."

On the contrary, the indiscriminate introduction of self-styled "courses in agriculture" often develops in the student a dislike of anything associated with farming. This serves as an early warning of the great care which is needed when presenting a programme of agricultural education to the people.

V.L. Griffiths introduces his paper on "The Problems of Rural Education" (UNESCO: 1968) with these words: "I hold the view, based on my own experience, (and I have seen no evidence to the contrary), that in backward rural areas the schools cannot be made a main instrument of progress". In his concluding paragraphs he uncompromisingly expresses the view that: "school education must be ancillary to rural change and cannot pioneer it."

Griffiths adds even further emphasis by saying:-

"To establish special schools for rural children, where the curriculum deliberately attempts to keep them on the land, is to thwart their hopes and ambitions for their children and for their own old age - - - - Experience would seem to show that in most areas special schools for rural children would be completely unacceptable." (Griffiths, 1968 : 16).

Finally another warning about over-reliance upon such specific education comes from Gunnar Myrdal (1970: 191) in "The Challenge of World Poverty":-

"The fact that a more practical and vocational participation in manual work, which is despised, and that they presumably prepare students for jobs where manual work is part of a regular routine, helps make such (secondary) schools less popular than the traditional general ones".

Clearly, education alone cannot bring about rural reconstruction. A starting point would seem to be concerned rather more with measures to increase the quality of rural life. As Harbison (1962: 444) says:-

"The only fundamental solution is the modernisation of rural life. This calls for such sweeping measures as land reform, agricultural research and extension services, widespread rural community development, the effective utilisation of rural labour in the building of roads, irrigation systems, houses and schools, and other programmes aimed at making rural life more productive and attractive. If people see a positive reason for remaining in rural areas and a promise of a better life there, the problem of the revision of curricula in the schools will be relatively easy to handle".

Meantime a change is only likely to be effected by linking educational advance closely with rural change and with the modernisation of agricultural production.

"There is need for a wide range of services in the rural areas, not for agricultural improvement alone, since the development of agricultural productivity depends not only on technical advance, but on the raising of the whole standard of rural living and the improvement of health, education, communication and administrative services." (Hayden, 1967: Vol I: 128).

"Agricultural growth requires the development of rural education but usually fundamental changes in the landowning system, the size of production units, agricultural credit and marketing arrangements as well". (Malassis, 1966: 23).

The rural sector is usually characterised by a shortage of skilled manpower, under-employment and labour/land imbalance, the predominance of subsistence farming, lack of capital, the shortage of institutions concerned with the necessities of rural development, the plethora of different authorities and the multiplicity of constraints engendered, and the fact that agricultural work is deemed servile and often held in contempt.

Improved agricultural production and marketing can drastically modify the unfavourable features of rural life. Traditionally, however, there are less incentives to progress in rural communities. There is a tendency to acquiesce with authority, and then do nothing!

A supreme aim of education should be to change the attitudes of the children and ultimately of the whole people. There is also an accompanying need for vigorous efforts in adult education which should be closely related to and, indeed, be an extension of the activity in the schools. One critical task is to increase the number and the qualifications of trained teachers to undertake this work.

One of the most urgent problems facing developing countries is the serious shortage of educated and trained personnel, at all levels of proficiency, but especially acute with regard to personnel trained for agricultural development and rural education, especially as the bulk of illiterates are peasants. If agriculture gets bogged down and neglected, it becomes more difficult to develop anything else. The indications are that technical progress in agriculture is itself directly linked to the development of rural education. Bringing new knowledge to peasant farmers is probably the most productive investment which can be made in any of the poorer agricultural economies.

The modernisation of agriculture both causes and is caused by the development of education.

There is, however, usually a maldistribution between agricultural and industrial training in which agriculture is far too weak.

Statistics usually reveal marked disparities to the disadvantage of the rural population. This is at a time when education must provide for the concurrent economic, social and cultural advancement of the country dwellers.

From the viewpoint of "investment education", the essential aim is to organise the training of skilled workers to fit the needs of economic development insofar as the number of hands required at any given time can be forecast.

From the viewpoint of "consumption education", equality of access to education for the various socio-economic groups is the key factor, e.g. the campaign against illiteracy is justified by the acknowledged right of every individual to the chance of basic education, and a way of escaping from social inequalities.

The school-centred idea of education is increasingly giving way to a comprehensive idea embracing the community as a whole, with community development seen as activating this all-round development picture. The ideal is where the specialists in health, education (including adult education), domestic economy, agricultural extension, co-operatives, etc., conduct a co-ordinated cperation at village level with economic growth and social development progressing hand-in-hand. It is a serious deficiency in many development projects that this co-ordination is not always secured, and this is to the detriment of the aspirations and expectations of the peasant.

Serious lack of co-ordination often exists between agricultural education, vocational training, adult education, extension services, community development, and rural research, including that of a sociological nature.

There may be merit in the idea of establishing a permanent Standing Committee for Agricultural Education, charged with the task of integrating all services relevant to agricultural progress.

This progress must be seen as well as debated. Successful agricultural educa'ion depends so much on the visible evidence of successful farming. It is imperative that agriculture's "second-rate" status should be removed as a matter of extreme urgency by all means possible. This would be an important task of the Standing Committee. An exchange of ideas and experiences at international level in the broad area of agricultural education should also be of value.

One of the most important tasks facing any co-ordinating Committee is to thoroughly examine the importance of re-allocating effort as opposed to merely extending existing efforts.

One apt quotation reads: "--- it cannot be emphasised too strongly that the existing structure and forms of education in the developing countries, largely imported from Europe and America, are hideously expensive and out-of-touch with the economic realities of these countries". (O.E.C.D. Report, 1962).

Given limited education resources in this development context, the problem is one of putting what is available to the best concerted use possible, and this is largely what the subsequent chapters seek to discuss.

II - PRIMARY EDUCATION

Sixty percent of the earth's inhabitants are peasants. Many are illiterate and, for most, their education will not go beyond the primary level. Ideally, and this is asking a great deal, primary schools should be able to instil into the pupils a liking for country life and to lay the foundations for the comprehension of agricultural progress. This is not always easy, bearing in mind that the teacher, himself, is often a reluctant rural dweller and salaries in primary schools are exceeding low and their status depressed.

In many of the poorer countries, children who have enrolled in primary school drop out early or do not attend school regularly.

"If they do not drop out they then become repeaters, which is often a prelude to dropping out. Ordinarily less than half of those children who originally enrol complete primary school in the regular way. The primary school is also of shorter duration in most of the poorer countries .... Irregular attendance, repeating and dropping out represent a huge waste of resources. The wastage is greatest where it can be least afforded .... The situation is much worse in the poorest countries, and in all countries worst in the rural districts where the greatest number of children in the region grow up." (Myrdal, 1970: 185, 186).

The development of education is necessary to ensure rural development but there is always the danger that it will speed up the exodus of the most talented and best educated. For many countrymen moving upward in the social scale this means changing their occupation.

"Many educators might argue that what rural schools should do is to prepare youngsters to transfer to the city. This well-intentioned view, however, simply does not square with the realities facing the large majority of these youngsters." (Coombs, 1968: 81)

Nigeria cannot provide jobs for more than 5% of the total workforce in the modern urban sector, and at the best this figure cannot grow very fast.

Primary education is usually expanding in developing countries, but often at the price of low-quality standards, especially in the rural areas, and yet the quality of basic education is bound to condition the organisation of agricultural training and extension services at all levels.

The availability of suitable teachers has been mentioned as one problem. Capital investment may be another serious limiting factor but there are cases where the cost of school building can be reduced by the use of villagers and pupils in the erection of simply constructed schools.

What is needed is not simply to add more education to what already exists, but to change in a fundamental way the whole structure, direction, and content of their educational system.

An ideal would be to make the curriculum more orientated to the life of the community, incorporating elements of manual work. This was Gandhi's intention in India but it was not successful, largely because it required participation in manual work, which is despised. When being educated ceases to be a monopoly of the upper class, it should be easier to dissolve that class barrier which determines who performs manual work and who does not soil his hands. Monopoly of education, like the ownership of land, is a fundamental basis of inequality which persists particularly in the rural areas of the poorer countries.

The revision of rural school programmes, by the installation of agricultural schools in country areas, is not by itself adequate to solve the problem of the flight from the countryside.

Griffiths (1968: 17,18) draws attention to the fact that "One country which had enthusiastically taken up agriculture as part of its rural primary and middle school programme has completely abandoned it after a trial of about a decade. In another, no more than 2 percent of school-leavers in a group of rural schools, teaching rural science, were found to go back voluntarily to farming .... Parents want their children above all to get qualifications. This is the main obstacle to the success of any rural features in schools."

It might well be argued that this is going to a depressing extreme to make the point, and that some ray of hope may lie in such a compromise as is discussed later in this Chapter.

The fact is usually accepted that in rural areas the primary school has a dual role to perform, and that teacher training must be orientated accordingly.

Malassis (1966: 43) puts it this way: ".... it should be an object to preserve the folk culture, and that the rural school should be focused on rural life and community education. At the same time, the system must not be such as to rule out or hinder access to secondary or higher education for country children, ending with the selection of the elite on birthplace rather than aptitude".

Speaking of the country children who succeed, Hayden (1967: Vol I: 129) has this to say:-

They "are magnetised by the life of the cities and the distinction of the white shirt of the office worker and the administrator, with the result that the rural economy, despite its importance, is starved of energetic, capable, well-trained young men, though these may actually have been contributed by the countryside to the training programme".

In similar context, Malassis (1966 : 49) makes the statement that "historically the agricultural population is mainly determined by the demands for non-agricultural labour; it is the creation of jobs in the non-agricultural sectors which fixes the volume of agricultural manpower. "The agricultural population is the manpower reserve on which the other sectors draw to provide for their own growth".

The available agricultural population is usually much greater than the "normally necessary" population.

To return to the dichotomy facing the primary schools: on the one hand, there are the minority of pupils who can profit from a traditional type of academic training and who are likely to move on to secondary education and perhaps go even further. A decade ago, these students would have become the clerks and other subordinates who were such an integral part of colonial machinery. Now some may aspire to becoming citizens of greater distinction, destined for posts formerly held by expatriates, or for other new white-collar jobs generated by the country's development programme. Many will train to become teachers for whom there is an ever-increasing demand as a country's extensive Education Plan moves towards reality.

At the same time, and on the other hand, there are the majority of pupils for whom a purely academic programme may be largely a waste of time, although one might reasonably argue that even the humblest peasant on a smallholding can benefit from being at least minimally literate and numerate. If nothing else, he will become more readily equipped to support and guide his children in their quest for education, and for a more enlightened attitude to rural improvement.

Meantime, school should be seen to have some practical value even for the most backward pupil. What, in fact, have these non-elite pupils to look forward to when they complete primary school - if, indeed, they do complete it? They have no passport to a job in the city, though this does not prevent a large proportion of them from leaving their villages in an often fruitless search for urban employment. Substantial numbers do, however, return to the land and to their family farms. It is on the subsequent achievements of these young people that so much of the country's future depends. They may help to bring about an era of relative prosperity, or they may

exacerbate the problem of rural poverty. Most underdeveloped countries, unless they are generously endowed with mineral deposits, look to an awakening agriculture as the key to their development.

What, then, can effectively be done for these young people during the few years they are likely to be at school? Should they be taught any agriculture? Even if this were possible, is it feasible? Who would teach it and how would it be taught? In a one-teacher village school how could the interests of the brighter minority be catered for, whilst trying to indoctrinate their peers with up-to-date farming practices? Where would one find teachers with the necessary versatility and motivation? After all, it is difficult enough trying to find teachers with even the barest minimum of skills and the will to break away from tried and traditional methods.

It seems, however, that a compromise might be possible : one where a rural bias is applied to the syllabus in order to give it added meaning and relevance.

For the brighter child, using the natural environment as an instrument of teaching in this way, may well add interest and pungency to the work in the classroom, especially if it is done really well. It is not expected to make any converts to agriculture from amongst the ranks of the more able, but it will be very unlikely to retard their progress or interfere with their ultimate escape from the village.

For the average and below-average, it might evoke their interest and curiosity more than would, say, English grammar. Another aim would be to update and embolden their outlook rather than merely strive for the assimilation of facts or the acquisition of manual skills. It might even claim success in changing many pupils' attitudes towards learning, as well as giving a new sense of purpose to the teachers. If this were to come about against a background of rural reform, "rural studies" might really prove worthwhile, especially for those pupils who have holdings to go back to. There will, however, still be the drift from the land and the search for jobs in the city. But for those who do remain behind, life might become a little more tolerable and rewarding than hitherto.

I think it pertinent at this stage to provide an example of how the application of a rural bias might work at the upper primary school level. The first step is to select a topic or theme which both arouses the pupils' curiosity and lends itself to an inter-disciplinary approach. Where more than one teacher is involved you are then dealing with a project which is team-taught. No member of the team needs any highly specialist knowledge or skills in agriculture - only an interest and an awareness in the countryside around him and a willingness to extend himself beyond the constrictions and confines of the text-book.

A possible theme might be a simple and uncomplicated study of the cereal plant : Maize. Maize, ground and consumed as "mealie-meal", is the staple diet in many developing countries.

A small plot of cultivatable land, not more than 40 feet by 20 feet, in the precincts of the school grounds serves as a focus for the project without involving the pupils in endless dreary repetitive manual labour likely to alienate them from the start.

Assuming there are no significant differences in the soil texture and fertility within this small patch of ground, the area may be divided into eight equal strips. Dividing up the plot in this way provides a practical exercise in mathematics with a stick of measured length as the only equipment needed.

The next step is to sow the maize seeds which, ideally, would have been supplied by the local agricultural extension officer, the quantity provided being too small to warrant any financial transaction. But if the seed had needed to have been purchased what would have been the cost to the school at current market price for maize seed?

Now the actual sowing. The first strip would be ordinary unimproved maize seed as used by the average farmer, planted in the same way and at the same time as in customary field practice. The second strip would be sown at the same time, and in the same way, but with a recommended quantity of fertiliser applied alongside the seed. In the case of the third strip the same amount of fertiliser would be applied, not with the seed this time, but a few weeks later, once the plant has emerged as a strong seedling.

In the fourth strip, the maize would be sown a month earlier than is usual, and in the fifth strip a month later. In the sixth strip the seeds would be placed closer together than is customary, and in the seventh strip they would be considerably wider apart.

The final strip would be a reflection of the extension officer's recommendations. An improved seed, specially bred for the purpose, would be used and the fertiliser application, the time of sowing and the spacing of the seeds would likewise be prescribed.

Here then, in miniature, are eight different methods of husbandry. Clearly there could have been two or three times that number of permutations, but the wise school concentrates on "a little done well" which is perfectly adequate for its own purposes. The aim is emphatically not to establish, in the light of past disasters, a so-called school farm.

The agronomist researcher would hold up his hands in horror at the thought of plots which had not been statistically replicated. He would probably argue that pupils might form the wrong conclusions from their observations. It should, however, be remembered that these plots make no claim to be experimental trials. They are merely observation plots and, as such, they serve in a variety of ways as an aid to teaching.

Tw or three times each week, a group of students would inspect the plots and record their observations in their own way. Individual diaries would begin to evolve, some of them quite imaginatively. Utilitarian English maybe, but better than no English at all, remembering that projects like this are designed primarily for the less academically able: those who will learn more readily through the familiar than through the abstract.

Most of the children will be going back to their farms. If, as a by-product of such an exercise, they learn from their observations that the application of fertiliser may have an almost magic effect, that new varieties of seed can dramatically increase yield, that there are optimum seed rates and times of sowing, then so much the better. If nothing else, they will begin to appreciate that man can exercise some control over his environment and that even the humblest peasant farmer can do something to improve his lot. Thus, a more optimistic attitude of mind is frequently induced.

To return to the project. From the time of sowing to the time of harvest, there is unlikely to be any shortage of simple mathematical exercises. The English need not be confined to keeping the above-mentioned diary. It would be hoped that the local agricultural extension officer would become actively involved in the technicalities of the project, and that communication with him would largely be through letters devised and composed by the pupils. The ability to correspond clearly and purposefully is surely one of the most functional benefits of literacy.

As an introduction to science, (or, in many instances, it may be all the science the pupil is likely to receive), studying the habit of growth of the maize plant from sowing and germination through to harvest time can become a fascinating study in the hands of an imaginative teacher who has recourse to the saucer and the plant pot, as well as to the outdoor plots.

In history, the teacher can recount how maize was first introduced into the country and how it helped to transform nomadic tribes into settled peasant communities and how more modern techniques of cultivation can play so prominent a part in the country's development programme.

In geography, reference can be made to the use of maize in other parts of the world, including the developed countries where corn-on-the-cob is often considered quite a delicacy, or where it may be cut in its green vegetative stage and ensiled (that is to say, pickled by induced fermentation), so that it can be eaten by the cattle in the winter time when the grass has temporarily ceased to grow. A good deal of maize is grown in the United States of America where it is stored as grain in enormous tower silos before being ground and fed as meal to fattening pigs destined for bacon. A selected letter from one of the children to the United States Information Service would probably prove to be very fruitful. Indeed, this is a tactic which can be adopted when searching for information from all over the world. I think it can be commended, not just as a literary exercise, but also as a means of adding a global perspective to the pupil's thinking. Perhaps it might even induce the child to make greater use of the word "why" and to begin to develop an enquiring mind. Why, for instance, is maize so often the staple food in African countries whereas in Asia the basic food is rice?

Whilst on the subject of food, the girls can relate their homecraft to the maize project. Young though they are, they can be made aware of the fact that maize is not, in itself, a balanced food and that total reliance upon it will inevitably lead to malnutrition. Whenever possible they will produce dishes where the "relish", as it is called, will provide the necessary protein supplement, often derived from fish. Whilst the girls are doing their homecraft, the boys might well be doing handicraft related to the maize project - the making of basic tools for instance.

A final word on this application of a rural bias to a central theme. One of the aims is to widen the pupil's angle of vision and to deepen his understanding of the world around him, a world in which changes are taking place more rapidly than ever before in history, and the momentum will undoubtedly increase and gradually spread to all the corners of the earth. In this context, the pupils, particularly the older ones, need the experience which is to be gained outside the classroom. The "maize project" can provide for visits to farms in the neighbourhood - perhaps even to a farmers' co-operative which has a tractor and which buys seed and fertilisers in bulk. The possibilities are endless in the right hands. As we shall see later, however, there are also pitfalls which are ubiquitous, so much so that the teacher is relieved to be able to crawl back to cover behind his tried and trusted but old and outdated text-books. This, at least, will not put unwarranted strains on his powers of imagination!

The aim, then, is to provide general education in an agricultural setting - not the other way around. The teaching has a relevance to the world of work, with the agriculture as essentially a means to an end, and not an end in itself. It may provide a lead-in to vocational training, although this is essentially a by-product of the course.

Is this application of a rural bias as straightforward as it appears? The answer is an unqualified: "no"! First you need energetic and enthusiastic teachers with flair and imagination, and, included in their number, a natural innovator to act as a leader for team-teaching purposes. This may, of course, be the Head Teacher in a relatively small school. The content of the course could well be a consummation of ideas expounded during teacher training, or during subsequent in-service training. The teachers need to be good planners and organisers with the ability to liaise with local farmers and secure their interest and co-operation. Of vital importance, is the need to know how to use, rather than abuse, the school plot under cultivation. Tasks the pupils are called upon to perform must have an educational significance. It is not a case of turning the students loose with their hoes and rakes instead of keeping them at their uncomfortable desks in the classroom. The extent to which the school plot is used imaginatively can largely determine the image of the course.

The idea has long since been rejected that practical agriculture will lead children to believe in "the dignity of manual work" or that school gardens are used to beautify the school compound in the process of teaching the subject. It has not been uncommon in the past to find work on the school plot being carried out for punishment purposes.

Should the burden of agricultural training be placed upon a specially designed vocational element in the syllabus, perhaps given the title of Rural Science? The persistent failure of low-level agricultural schools suggests that this direct approach is out of place. One of the reasons is that the teaching ideas and materials have not always been the product of persons having an intimate knowledge of local agricultural practice.

Rural primary schools, as a whole, can be expected to contribute substantially towards achieving a variety of objectives affecting the quality of life of the rural population. These include the desire for more ambitious standards of living; enquiring minds which are not governed by tradition and superstition; increased foresight and a readiness to co-operate especially where innovation is concerned; a willingness to work hard given reasonable incentives; the ability to read instructions, write for advice, calculate crop yields, as well as apply their handicraft skills; and a knowledge and understanding of the economic and social changes which are taking place around them.

These changes in attitudes and understanding, as well as in the quality of thinking, cannot be acquired by additions to the curriculum, but rather by permeating all the teaching with these new and realistic ideas so that they become part of the pupil's thinking and make-up, applicable in all relevant situations.

With teachers poorly educated and often untrained, every known and feasible device must be employed if the individuals concerned are to add this extra dimension to their teaching and to their influence on the children. These devices would include refresher courses, help from peripatetic advisers and from local extension workers and the provision of supplementary teaching materials, including text-books and a comprehensive manual designed to encourage the teacher's thoughts and interests to range far beyond the close confines of the classroom to the complicated, changing affairs of everyday life outside. Above all, this element should be given due emphasis in the basic training of teachers so that they are fully able to increase the total relevance of the school to the countryside.

III - SECONDARY EDUCATION

At the conclusion of primary school comes the vital cut-off point : all the more vital because the shortage of facilities and of teachers and of finance usually allows for only a minimum of those who have completed primary school to proceed uninterrupted into the secondary phase of their education.

Two vital questions present themselves. Firstly, who are to be the favoured few just mentioned? Secondly, what is to happen to the others - those who make up the substantial majority?

In many countries, organisations such as the World Bank help to finance educational projects, although it is recognised that their assistance can fulfil only a small part of a country's requirements in this sector. By what criteria then is this crucial choice to be made? An attempt to paraphrase the sentiments of the World Bank might read somewhat as follows :-

"The shortage of indigenous trained manpower is one of the major impediments to economic growth in many developing countries. The Bank believes that improved educational facilities, based on careful planning of education systems to make them relevant to students' subsequent employment opportunities and countries' needs for skills, are among the soundest forms of investment to be made in the developing world."

"The Bank tries to sharpen the impact of their education lending by concentrating their assistance on those parts of the education process which are most closely connected with a country's economic progress, and by promoting structural reforms of education systems aimed at making them more efficient and more relevant to countries' needs." ("The Australian" : 18th August 1971).

So far as primary school-leavers are concerned, five distinct possibilities exist:-

(i) A secondary school education of the traditional "grammar school" type which will provide the more academically able with a passport to college or university. Although virtually all the students strive diligently for this attainment, not all will succeed, and even if they do, further and higher education is not geared to offer places to them all. It is, therefore, inevitable that some must leave after taking their School Certificate to become clerks and minor officials, or else enter commerce and industry hopefully in a white-collar role! Some, however, may obtain entry to a technical, commercial or teachers' college for one or two years of vocational training.

Few would argue that the academic curriculum is beyond reproach, but in the circumstances of a developing country, there are so many reforms and innovations urgently requiring to be made, that this curriculum, despite all its colonial overtones and its dogged adherance to the unimaginative, must accept a relatively low priority in terms of re-evaluation and revision.

Where qualified teachers are available, Agricultural Biology may be included as a School Certificate subject, although there is no conclusive evidence to show that the teaching of Agricultural Biology has any impact upon successful performance in agricultural occupations at a later stage. The same would apply to the teaching of Vocational Agriculture as a School Certificate subject.

(ii) A secondary education which relates school more directly to adult life and takes proper account of vocational interests and intentions. Like its academic counterpart, this type of course provides the raw material for universities and colleges as well as numbers of pupils who, because of their own and the country's circumstances, cannot proceed beyond the School Certificate level. These technically-oriented secondary schools are likely to provide the manpower from which the country's agricultural technologists and technicians will come, whether they possess certificates, diplomas, degrees or even post-graduate qualifications. Many pupils leave school after the first two-year cycle of this secondary education in order to pursue another two years of full-time technical training.

(iii) Of those - and they are the substantial majority - who are unable to proceed to secondary school, not in every case is their primary schooling terminal. Trade schools exist, usually offering two-year vocational courses in various practical skills, agriculture included.

If somewhere in the region of 90 percent of the population live in rural areas, should this overwhelming majority be reflected in the extent of the opportunities offered at Farm Schools, as the post-primary rural schools are frequently called?

Again it is worth referring to a paraphrase of World Bank philosophy as it appeared in The Australian on August 18th 1971:

"The facilities available in the cities - electricity, transportation, water supplies, education, shopping, entertainment - are likely to compare favourably, however overburdened they may be, with those of the countryside. At the same time, the industries located in or around cities will probably provide workers with higher rewards for their labour than the kinds of job available in rural areas or small towns. Thus the decision to migrate to the cities is a rational one."

Migration is partly caused by excess population growth in relation to economic growth. "Over-ruralisation" - more people trying to earn a living on the same amount of land - leads to migration and "over-industrialisation".

Migration, according to this logic, appears as inevitable and, this being so, the policy regarding trade schools would presumably do well to take it into account.

It is a policy which is delicately balanced and which needs to be very carefully manipulated lest "education should become the tragic instrument whereby youth is plucked out of the traditional surroundings of rural poverty and thrown into the frustration and insecurity of urban employment". ("The National Times", July 17th, 1971).

Guy Hunter (1966: 118) sounds another warning note by saying that it is "... useless for education to attempt to prepare children for an unchanged rural life when their parents are demanding an escape from it. The schools alone are helpless in effecting any dramatic change in rural life. They can be effective only if they are part of an economic and social plan which makes farming economically more attractive."

(iv) There will be pupils who leave the primary school and return to their village without any further prospect of full-time education. The more fortunate may receive part-time training through the regular visits of a mobile training unit or through membership of a Young Farmers' Club or the National Youth Service. Radio programmes and periodic news-sheets, however rudimentary, are a useful reinforcement. (The latter also help to prevent a lapse into illiteracy).

(v) Finally there are those who are completely untouched by any form of post-primary education or training. It would be useless to pretend that, except for a fortunate few who might find labourers' work in the city or on a rural development project, these people will know anything other than grinding poverty, malnutrition and unemployment, at least during their generation.

A number of agricultural secondary schools are normally to be found, and they usually make the claim that agriculture is being used as a vehicle for general education, as in the case of the upper primary schools just described, only at a more advanced and sophisticated level. Sometimes the curriculum closely resembles that of a vocational training establishment, which it purports not to be. It is generally recognised that the most effective technical training is given at the post-secondary level when a background of the basic disciplines has been built up by a process of educating the whole person rather than by training in specific skills. This, ideally, is where the agricultural secondary schools, (or for that matter, secondary technical schools in general) fit into the picture, but a number of highly relevant warning notes have been sounded.

Hayden (1967: Vol I: 177) expresses the idea that "In the rural areas, the expansion of secondary education should be built round the social and economic environment, dealing with the principles of co-operatives rather than with the cultivation of crops, and the mechanics of agriculture as well as its practice."

Malassis (1966: 22) adds: "Although the necessities of overall development frequently lead to the opening of specialised establishments for industrial or agricultural vocational training, it is desirable that technical education should not have the appearance of a category on its own, fenced off and looked down on ... agricultural education lies in the domain of the general educational system and not simply in that of agricultural education in the narrow sense."

Myrdal (1970: 189, 190) points out: "In spite of all efforts in the postwar period to orient teaching to practical life, to impart useful skills, and in particular to give more emphasis to vocational and technical education, the great majority of all secondary schools in South Asia have retained the "general" preacademic and literary character established in the elite types of upper-class education in colonial times. In no country of the region are there signs that a radical change is underway."

The shortage of teachers in the developing countries is the main bottleneck in the development of schooling for agriculture. There is a scarcity of persons who can teach technical subjects: higher salary and social status are to be found in government and industry.

Generally speaking, the number of pupils per teacher is lower in agricultural education than in other types, (due largely to the amount of practical work involved), and thus the capital cost per agricultural pupil is calculated as being higher than for any other form of secondary education.

Another deterrent is the importance so often placed on passing examinations and acquiring status, whilst practical training for life and work is ignored. Students and parents are as much to blame as administrators and teachers, especially when it comes to placing greater emphasis on technical and job-directed training.

There are, however, two erroneous assumptions with regard to agricultural education to which attention needs to be drawn.

(i) It is suggested that training in the basic physical sciences has a significant "carry-over" effect upon the performance of technical agriculture, this despite the fact that few of the complex skills needed in modern agriculture are directly related to the teaching of science principles alone.

(ii) It is further suggested that academic excellence is incompatible with excellence in the performance of applied skills. At all levels, training in manual skills is usually divorced from the expectation of high performance in mental skills, hence the "academic" and the "practical" programmes.

Especially where such divisions exist, all terminal training programmes should have a "way-back" into the main educational system for students who show unexpected promise.

The above remarks do not constitute a veiled plea for the retention of the "status quo" and an unreformed curriculum. Carter (1966: 18) graphically points out in his book, "Into Work", that there is no case for this even in the more advanced countries where they have had more time to put their house in order. "The fascinations of science are more mundane by the repetition of uncomprehended formulae. History is churned out in the form of dates and mixed with improbable stories. English is reduced to verbs and antonyms. Literature is debased as children are called upon to chant sonnets in unison, or to do some compulsory reading of classics that abbreviation has rendered meaningless".

"The aim of education", observed the Harvard Committee on the "Objectives of General Education in a Free Society", "should be to prepare an individual to become an expert both in some vocation or art, and in the general art of the free man and the citizen".

With the aims and objectives and options clearly thought out and carefully put into practice, secondary schools have a vital and critical role to play in developing countries. The suggestion is sometimes made that siting general and technical secondary schools in over-populated rural areas might help towards achieving a more even population distribution, especially if the educational programmes facilitate the adjustment of some of the rural youth to stable employment other than in agriculture.

IV - VOCATIONAL TRAINING CENTRES

The development of a system that will allow young people to be given agricultural training as soon as they leave primary school has rightly been a matter of concern in all countries, since it will become increasingly important with the extension of education and the obligation to guide a majority of young people into employment on the land in view of the lack of adequate opportunities in other sectors of the economy.

It is generally accepted that on leaving primary school, many young people leave their villages to look for work in the towns. Probably they will join relatives there, but an alarmingly high proportion will remain unemployed. Some countries have had to take special action to provide work in rural areas, for instance by organising youth camps or settlement schemes. This is dealt with in the next chapter.

Historically it has been thought that all that was needed to farm was experience based mainly on tradition and actual work on the land.

Technical progress has, however, brought modernisation to the countryside and transformed both the people's outlook and their way of life.

Appropriate vocational training, therefore, has been found essential to enable modern production methods to be correctly and efficiently applied by farmers. The aims of agricultural training are (i) to improve the use of land and increase output; (ii) to increase labour efficiency including coping with underemployment and seasonal unemployment; (iii) to render agricultural work less arduous, especially for women and young persons; and (iv) to improve living conditions in the countryside.

The categories of workers to be trained include (i) the self-employed owner-occupier cultivating his own peasant farm with the help of his family; (ii) tenant farmers and share croppers; (iii) members of producers' co-operatives; (iv) agricultural workers, both permanent and seasonal; (v) nomadic stockmen; and (vi) farmers' wives; (these latter seldom enjoy a high priority, despite the important role women play within the family and the rural community as regards nutrition, hygiene and housing, as well as performing their farming tasks).

Training schemes of this nature are usually established at regional and local levels concentrating on agricultural training centres, often referred to as "farm schools". (This latter term is very loosely applied in varying contexts and is probably better avoided altogether).

Training needs to be as extensive as possible, and must cover not only the technical questions that arise in the agricultural field, but economic and social matters as well. The programme should be simple, practical, and unpretentious, and based on the observation of facts and the practice of farming operations.

Many vocational courses suffer from a surfeit of arid and indigestible helpings of theory. "Reforms should also concern what is taught, with what intention, in what spirit, and with what effect, for instance in regard to willingness to perform manual work. Unfortunately much education in these countries is now even plain miseducation and apt to raise impediments for development". (Myrdal, 1970: 169).

The equipment of the vocational training centres and their "model farms" must not be beyond the reach of the majority of cultivators, and thus in practice present little usefulness to them. Similarly, the improvements advocated must be capable of practical application by the peasant farmer who must see good prospects of real cash benefits from adopting new methods.

To train existing farmers, there can be no doubt that most weight should be given to the more practical aspects of training. On the other hand, in the case of young people, (akin to apprentices), who have received some school education, an attempt should be made to balance general education and practical training and to secure a balanced allocation of time between the theory and the practical.

There are two main kinds of person required for the functioning of a rural community. First, there are the peasant farmers themselves. Second, there are those employed in ancillary services and paid either by the government or large companies. They are concerned at grass-roots level with pest control, irrigation, animal health, crop-grading, market recording, building (with all the various trades that this involves), and automobile and farm machinery repairs. It is imperative that both categories of persons have appropriate vocational training made available to them at a variety of levels.

Training at the lower vocational level should be a responsibility confined to as few Government departments as possible and should make available to the communities all-round personnel fully conversant with rural customs, traditions and outlooks. Seldom is the Ministry of Education involved, and it is very rare to find any trade instructors trained in teaching methods.

There is no doubt that the development of primary education allows school-leavers to be given better vocational training. The position at present, however, is usually far from favourable since a high proportion of the farming population is illiterate. Action taken at the national level in the form of literacy drives needs to cater for adult education as well as for the younger generation.

The need to provide vocational training for all those who work on the land, whatever their position in society, the kind of holdings on which they work, and their particular occupations, has led to a diversification of training methods and systems. Such systems can be reduced to two main types:-

(a) Training on the farm through the agricultural extension services.

This applies primarily to persons already engaged in agriculture who find it difficult to leave their farms for long. It will be referred to again in a subsequent chapter which deals with adult education.

(b) Training in apprentice-type vocational training centres, catering particularly for youth. (This does not, of course, pre-suppose that young people will receive no further training throughout their working lives).

Where residential training facilities are unavailable or over-subscribed, the training of young people may take place on the family farm. An example of this system is the working of Young Farmers' Clubs. The sons of farmers carry out elementary practical work relating to definite subjects such as the breeding of pigs, the raising of calves, the keeping of poultry, or the care and use of a tractor. This is done under the supervision of local agricultural extension workers and in accordance with a pre-determined programme. (Some successes have been recorded with Young Farmers' Clubs in rural schools, particularly those which are residential).

A compromise between full-time institutional training and part-time on-the-job training is the "sandwich course". Here the trainees take several courses at the vocational training centre, and after each course they return to their family holdings for varying periods of time. This provides a worthwhile alternation of theoretical and practical training.

A conventional apprenticeship is largely out of the question. It pre-supposes that there are enough farmers with the requisite qualifications and skills to direct and train apprentices, which is rarely the case in a developing country.

For the smoother running of training schemes it is important that at the local level permanent liaison should be established between extension staff and the instructors in the centres, and a complementary programme agreed upon so that the farmers and the trainees are confused as little as possible. Carefully planned and operated schemes can be quite inspiring, and the enthusiasm of the trainees infectious. Conversely an ill-conceived and apathetically executed programme can be indescribably bad, doing nothing but harm to the rural community.

V - YOUTH SERVICE

This is a scheme, adopted by many developing countries in their immediate post-independence period, whereby half-educated unemployed and landless adolescents are given the opportunity to work in return for food, uniform and camp accommodation, pocket-money but no wages, and a few hours of education and training each week. The community project concerned is usually run by local government under the auspices of the Department of Social Welfare, (or its equivalent), in association with a Rural Development Programme.

The aim is to try to cultivate a sense of purpose and loyal citizenship in the disadvantaged youth, and at the same time engage him in projects which will help to alleviate rural poverty. (Comparable schemes also exist in urban areas but they are usually not so numerous). Some of the girls who have completed primary school, but have gone no further with their education, are also catered for, with the emphasis on homecraft training.

The scheme, though admirable in concept, is fraught with difficulties. There is always the problem of finding suitable youth leaders, and it has not been unknown for youthful expatriates to be temporarily employed in this capacity. The difficulties are exacerbated by a certain distaste on the part of the youths for sustained manual work. Then there is the problem of finding suitable trainers, probably in short supply at all levels throughout the country, with the Youth Service commanding only a low degree of priority. Local village teachers may give literacy and numeracy classes in the evenings, and a vocational instructor might visit a camp on one day each week.

There is always the danger of the service developing into an aggressive national youth movement and used for political ends. It has been known to have a serious nuisance value to the public in more than one country with an autocratic regime. Despite all these difficulties, it is usually conceded that a viable Youth Service is instrumental in helping to reduce juvenile delinquency.

Schemes have a greater chance of success where empty land is available which can be brought into production after the necessary clearing and provision of access roads. In such circumstances, there is the possibility of establishing an economically self-sufficient unit, capable of serving as a pilot development centre. Such a "youth farm" could be designed to offer an apprenticeship in agriculture under a village settlement manager. Unmarried youths are selected with the emphasis on loyalty and enthusiasm. They are required to live and work communally for a period of about two years, after which training they would form the nuclei of planned settlement schemes elsewhere.

This is a form of land settlement, a term which is repeatedly referred to throughout these chapters, and which could well warrant further elucidation at this stage.

The aim of land settlement is to solve two main problems : (a) landlessness and rural under-employment, and (b) increased agricultural production. It is particularly difficult because the former requires smaller units and the latter larger units. It is seldom a panacea for urban unemployment.

Given a suitable selection process, settlers have a greater opportunity to break with tradition, where necessary, and to reverse the traditional priorities of subsistence before cash crops, than have farmers who are more traditionally grouped. There may also be benefits from decentralising development.

Land settlement takes place when (a) nomadic or pastoral populations become sedentary, (b) cultivators and planters form themselves into villages, (c) group farming or collectivisation forms a basis of re-settlement, with the emphasis to varying extents on co-operatives, and (d) settlement loans are made available.

There are variations in the extent of government assistance and advice to the settlers and in the scope of overall planning, i.e. whether or not planning for social amenities is integrated with that for economic production. The Ministry of Lands and Settlement, or its equivalent, is usually at the core of a settlement scheme, but where it becomes a broad-based community project, several Government departments are involved and careful liaison becomes a vital, yet elusive, requirement. It is debatable to what extent settlement schemes can develop without Government support.

The communal approach to farming methods is considered sound socially and ideologically as well as techologically. Communal self-help is claimed to offer an alternative to a colonial-type dependency on extension expertise radiating outwards from an alien centre.

A village may consist of 250 families, or about 1,000 persons. Only direct dependents live with the farmer, and holdings are not subdivided on inheritance. A holding is probably from 15-50 acres, dependent upon its nature, and is planned for subsistence and a small net profit after settlement expenses have been met. Participation in tractor hire schemes has helped the consolidation of group farms. The advantages of mechanisation, along with organised marketing, are amongst the outstanding benefits of co-operatives. A sophisticated co-operative may have a farm manager, a settlement officer, a co-operative supervisor, a tractor park and workshop with the necessary mechanics to repair machinery when broken, a co-operative society building, and a consumers' co-operative store.

The topic cannot, however, be left here, as there are so many endemic problems demanding attention.

Foremost amongst these is the question of training, especially as co-operation as a form of business imposes on settlers and co-operators, and especially on officials, new obligations unrecognised by tradition. A vicious circle is usually to be found, in that vocational training is inhibited where the traditions and mores of the countryside remain unchanged, but rural life cannot alter dramatically without a cadre of trained personnel in a wide variety of skills and expertise capable of assisting change. The problem is not just one of finding persons capable of being changed, even at the lowest grass-roots level. It is also one of finding the necessary trainers.

Another problem is that individual land tenure may obstruct large -scale group farming development. In most cases this is being solved, albeit cautiously, by political action.

Communal cultivation of communal land usually proves feasible, but there may be difficulty over communal labour undertaken on behalf of individuals, e.g. wood cutting and herding individually owned cattle.

No rural population has an entirely static distribution, and some areas remain mobile to a particularly high degree.

There is always the problem of how settlers are selected without resorting to nepotism and patronage.

Then there is the difficult problem of self-government and self-regulation on the group farm. Common economic production bonds have proved to be insufficient motivation, and frequently this has presented a choice between authoritarianism and chaos.

Another problem, in this context, concerns the fate of bad settlers and of squatters.

Demonstration plots have an important part to play. Should these be established in the socio-economic context of the farmers' own plots, or should they be located at research and demonstration centres?

Frequently, a serious problem is that of a rural society which is not culturally homogenous, and where group co-operation does not develop readily or naturally.

It should also be pointed out that the settlement schemes are usually so over-subscribed that they have nothing to offer the urban unemployed, even where the roots of these unfortunate people are firmly in the countryside.

Despite all these difficulties, and there are many more which have not been mentioned, the future of developing countries, so overwhelmingly agrarian, is closely linked to the successful establishment of settlement schemes and co-operatives. (The two are not necessarily synonymous). Where such schemes exist, and are seen to show signs of flourishing, they provide an added meaning to the development of a National Youth Service, Young Farmers' Clubs, and multi-purpose vocational training centres.

VI - FARM INSTITUTES

A highly important sector of a developing country's agricultural training programme is that which takes place at what is usually known as a "Farm Institute", or else bears some equivalent title such as "Forestry School" or "Fisheries School".

As the titles suggest, these training centres are usually run by the respective Government departments concerned, which in many ways is unfortunate because a "common core" in the training of all rural development workers helps to forge bonds of friendship between these services in the field, and to encourage a "global" concept of rural development. (This is referred to again in the next chapter when dealing with diploma training).

The argument is that time does not allow for a broad-based "common core" of subjects to be dealt with, and that narrow specialisation is inevitable, especially if there is to be a consolidation of general education and a sound vocational training which lays special emphasis on the practical element. Nevertheless, some would argue that the most effective technical training is given when a background of basic disciplines has been built up by a process of educating "the whole person" rather than by narrow training in specific skills.

According to Malassis (1966: 31), "technical training should do more than train an individual for a given occupation by providing him with the necessary skills and theoretical knowledge. It should also, in conjunction with general education, provide for the development of personality and character, and foster the capacity for understanding, judgment, self-expression and adaptation to varying environments"

It has to be remembered (a) that the student has not normally progressed beyond his two or three years at junior secondary school, and that (b) the training is almost invariably given by those with a reputation for field work but no experience of teaching and instructing. These factors tend to restrict the curriculum which is offered.

Farm Institutes and their counterparts are usually established on a regional basis in contrast to the vocational training centres which are locally based, whilst, at the opposite end of the scale, universities and colleges, awarding degrees and diplomas, are developed on a national basis. Farm institutes award a "certificate", usually after two years of full-time training.

The successful student normally enters Government employment as an Agricultural Assistant in the Extension Service. Besides crop and animal husbandry, he is probably expected to have a working knowledge of farm machinery, co-operative development, finance and accounting, marketing, settlement schemes, irrigation, pest control, and a variety of administrative and inspection duties.

Before long he will probably be called upon to do the work of a "technician" and thereby join the sparse ranks of the country's middle-level manpower. Even though he has not been trained to this level, something drastic has to be done in most countries, (and not only the developing ones), about the shortage of technicians to reinforce the work of the graduates and diplomates. The university output of graduates, (possibly supplemented by expatriates on contract), tends to outrun the provision of technicians, so that, instead of a ratio of 1 : 4 or 1 : 5, it is nearer 1 : 2. In many countries there is a shortfall at certificate training level as well as an alarming drop-out rate. This only serves to underline the fact that agriculture is far from being a popular vocation. Many a potential Agricultural Assistant will give up his training if he sees the opportunity of becoming a clerk in the commercial world.

It should be pointed out that, in many instances, not all those qualifying from a Farm Institute enter Government service. Some may return to the land by qualifying for special credit arrangements. They are among the potential community leaders in a group farming project, and therefore serve the Government's interests as well as their own. Others may join the staff of commercial firms concerned with supplying the agricultural industry with a variety of products, commodities and appliances. In an indirect way, they too are aiding rural reconstruction.

Whatever the certificated agriculturalist does, he will find himself, at least in the early stages of his career, in face-to-face daily contact with the peasant farmer. This immediately draws attention to the nature and quality of the training. If the essential aim is to produce what the developing countries most urgently need, namely technicians for work in the field, then a vital prerequisite of this is to have Farm Institutes where the teachers and the students have been trained on practical lines.

If Agricultural Assistants are to convincingly converse with practising farmers about milking a cow, fattening pigs, driving and maintaining a tractor, or erecting a tobacco farm, they must have had experience of doing the job themselves, and herein lies the immense value of the teaching farm. It is virtually impossible to have a teaching farm which is at the same time a demonstration farm. In the Farm Institute set-up, there is probably a place for both, the teaching farm being more in the nature of an "outdoor laboratory", whilst the demonstration farm not only provides practical examples to help the student to consolidate his theoretical learning and render it more meaningful, but it also provides a service to the local farming community, and regular open days should be a feature of its activities. It is furthermore imperative that what is taught in the classroom strictly ties in with what is practised on the farm.

This sounds singularly obvious but a confusing dichotomy is all too frequent an occurrence. There must be the closest possible liaison between those who teach in the classroom and those who organise field practice. There is much to be said for the person who teaches, say, cattle husbandry having a major say in how the cattle are managed on the teaching and demonstration farms. Similarly with the person teaching grassland management, farm mechanisation, and so on. One reservation is that the farm manager requires to be a gifted and patient co-ordinator having to weld together so many sectoral interests into a coherent whole.

One of the pitfalls inherent in theoretical training at this level is the way in which it can so readily be geared to the assimilation of bare facts by means of rote learning which, besides being bad teaching, is of little use to the future extension worker whose reasoning must be flexible in order to meet any situation which may spontaneously arise in his dialogue with a peasant farmer.

One questions whether a watered-down version of a university syllabus is of any value at all. Surely, it can be argued, a Farm Institute syllabus should be capable of developing a character and approach which it can justifiably call its own. I doubt whether there is any case at all for including great wads of agricultural botany, nutrition, soil science and genetics as subjects in their own right. Personally, I favour the idea of interspersing the discussion of husbandry techniques with simplified scientific explanations. In this connection I feel there is an urgent need for suitable text-books and teaching manuals.

The programme must not be so full that it does not allow time for detailed discussions about the history and the changing structure of the rural community in which the extension worker will find himself living and working. Extension techniques are seldom innate to the extent that they do not need to be acquired. Some very simple psychology relating to ways and means of "selling" new ideas to inherently conservative country people is, to my mind, an essential ingredient of the course, but how seldom one finds it included at all at this key level! It is a part of the programme which, ideally, lends itself to group discussion.

Most students, when they enter Government service or operate within settlement schemes, will be called upon to carry out certain administrative duties, and these will probably increase according to length of service. (They are usually carried out with incredible zeal, there being an apparent prestige value in sitting behind a desk and giving instructions to clerks and other subordinates!) The skills necessary include farm calculations, record-keeping, letter-writing, office organisation, and an understanding of ways in which Government departments operate.

This leads on to the next point, which is the imperative need for some time to be allocated to strengthening the students' general education, with especial reference to English, mathematics and general science.

All in all, this adds up to a very full two-year programme, and one in which the inclusion of practical work could very easily become neglected, especially as its organisation can become quite a complex affair. Most of the farm jobs, especially where livestock are concerned, are carried out before classes start in the morning, and after they have finished in the afternoon. However, ploughing and other field work almost certainly needs time set aside for it during the day. All practical work needs to be arranged on a rota basis so that full participation and individual instruction becomes possible. Each student may spend a week at a time on a particular job, with probably a fortnight's break between one task and the next, in order to allow his fellow-students to take their turn. The organiser of practical instruction is, or should be, a key man in the Farm Institute hierarchy and a great deal depends on his ease of relationship with the farm manager.

When it comes to assessing students, it is my belief that somewhere in the region of 50 percent of the aggregate marks should be awarded for practical aptitude and know-how. Only in this way can it be ensured that an extension service will enjoy the practical reputation it needs in order to function effectively and enjoy the confidence of the rural community. If an extension worker visits a peasant farmer who is having trouble with his tractor and he can diagnose and rectify the trouble on the spot, then not only is he likely to enjoy the confidence of that farmer for years to come, but the farmer will spread the word amongst his neighbours so that our competent extension worker may practically become legend in his district - so much so that any suggestions he might make in the future in connection with improving husbandry methods are likely to be well received and his extension work becomes that much more successful.

Finally, an additional function of the Farm Institute. There is great value, particularly in terms of field staff morale, in upgrading the more industrious and efficient personnel, and one of the important offerings which a Farm Institute can periodically make is the provision of in-service promotion courses. For decades this was of little consequence because of the low emphasis placed upon technical efficiency, not to mention social justice. Now it is virtually a necessity. It needs careful planning, and certainly the services, however temporarily, of highly trained staff to complement existing resources. The same would apply, though perhaps to a lesser extent, in the case of regular refresher courses, as also a follow-up service for advice and encouragement to those ex-students who have joined a settlement scheme.

Farm Institutes can well be strengthened by the addition to the staff of a professional research officer. Students, both past and present, can gain valuable experience by helping him to collect economic data from farmers and co-operatives in the region.

I see the Farm Institute, therefore, as the "spiritual home" of the extension worker operating at grass-roots level. It is certainly an institution which, though often neglected, is at the very heart of rural reconstruction.

VII - AGRICULTURAL COLLEGES

The normal pattern is for agricultural colleges to provide an all-round training at diploma-level, usually lasting three years, for students who are deemed to have been successful at the School Certificate level, or its equivalent, and whose main aim is to qualify for "white-collar" employment in Government service. Although agricultural diplomates may be given some such title as "Technical Officer", they are usually to be found carrying out professional duties in administration, research, planning, finance, marketing, co-operative management, extension, training, and other allied fields.

Colleges lend themselves to establishment on a national basis with a considerable degree of autonomy and responsible to their own College Council. Nevertheless, the majority are probably still regional institutions responsible to a Government department. The training aims to be more theoretical than that of a Farm Institute, but less so than at a university. It is customary for Colleges to award their own diploma without external assessment. Their image, at the one extreme, can be, and often is, quite a depressing one. On the other hand, there are diploma Colleges, albeit only a few of them, which have changed their structure and their style with the times, and which are in the vanguard of progressive institutions in developing countries.

Apart from those newly-established, most diploma-training institutions have grown from lower-level beginnings. The institutional structure and the amount of forethought devoted to these Colleges remains where it was when they were small, cheap and insignificant, save that an escalation in qualification requirements has occurred in direct response to the rising educational standard of the nation.

Changes have frequently gone, almost unnoticed, by those in charge of policy, who now find themselves with not just one, but probably three or four very "sick" agricultural colleges, all mutually competitive, all having endemic staffing problems, all unable to attract the best students, and all becoming extremely expensive to maintain. Some have outgrown their physical plants and are anticipating a costly renewal or adaptation of a wide range of facilities. In some countries they represent little more than a network of small-scale Government training schools, serving and trying to compete with other professions which have "come of age", and perpetually hindered and inhibited by the myopic vision of officials, mostly without direct experience in the training field, in the Government departments which claim them as their responsibility.

All this, when officially the diploma is unlikely to be rated as being far behind a degree. It is probably akin to what the U.S.A. would call an "applied degree". Even so it generally fails to attract the best students, and its running costs are high. Unlike Universities, there is no sharing of facilities such as libraries, laboratories, classrooms, specialist teachers, subsidised housing for staff and students, as well as the usual multiplicity of overheads.

Staff have no responsibility for research and experimental work and probably no contact with local extension work. More often than not, they have been agricultural field officers pressed by their Ministry into service at a College. As agriculture comprises a patchwork of very distinct sub-specialities, a single individual is rarely able to teach across subject boundaries as he would do at the simplified Farm Institute level. The temptation is for staff to see themselves as "experts" in a particular field, and the results are often as disastrous, in terms of "team-teaching", as they are depressing. (The crop husbandry man, for instance, who is not on speaking terms with his animal husbandry colleague!). This is particularly prevalent where teachers are not professionals in the training field, and where narrow specialism and obsession with content are likely to subsume pedagogy.

What, one might well ask, are the advantages of one large combined national College in preference to regional fragmentation? Materially, there would be more efficient utilisation of expensive skills and equipment which are now being wasted through the isolation of existing Colleges one from the other. But numerous other opportunities for a more exciting and progressive approach with an updated philosophy start to present themselves, and the subsequent discourse describes what, in at least one instance, has been proven in practice. For this reason, the passages which follow are presented in the form of a case-study. It is not meant to read like an unqualified saga of success. The College in question experienced its teething troubles, and its fair share of trial-and-error, probably more so than many of its more traditional counterparts, because so many of the ideas which it incorporated were new and therefore there was a limit to the experience to be drawn from other people's mistakes. Also, staffing problems appeared more acute since there was no reservoir of previous experience in this field.

The College had, however, certain initial advantages. It was a new venture starting from scratch, unencumbered by outdated and inappropriate traditions. Finance was available on a relatively generous scale. An ideal 700-acre site was made available on virgin land some eight miles outside the country's capital city. The timing was also helpful; operations began a year before the country attained independence. Residential amenities, in the form of single study-bedrooms, were excellent, and this helped to attract a rather better type of student than is usually the case with agriculture and allied fields of study.

In the first instance, diploma courses were of two years' duration because of the extreme urgency of "crash training" much-needed field staff. This was an emergency measure of a temporary nature, and overall planning centred upon the ultimate objective of three-year training.

The College offered eight diploma courses, all of them concerned with the Government's rural development programme. These courses were in Agriculture, Animal Management, Agricultural Commerce, Water Development, Fisheries, Technical Surveying, Draughtsmanship/Planning, and, (for the few women students), Rural Home Economics. The hope was that Community Development and Forestry would bring the number to ten and thus complete the pattern. (At the time the College opened, the Government departments concerned with these two courses, were reluctant to give up their autonomy. This attitude on the part of each of the authorities concerned was one of the bugbears of launching the project. They were mostly unable, or unwilling, to see rural development as a coherent whole!).

Wherever possible, especially in the first year, (the "foundation year"), elements in the teaching programme were integrated into what were called "common core" subjects.

One of the underlying aims of the College was to break down subject boundaries, transcend narrow sectoral interests, and attempt to overcome attitudes of inter-departmental rivalries by encouraging a concerted team approach, with each student gaining a clearer insight into the problems affecting other Government departments in the field. This was aided by the diffusion of teaching staff over the various courses in the College, which also helped to maximise the utilisation of buildings and equipment, as well as staff.

Every effort was made to avoid rule-of-thumb instruction, and to do everything possible to encourage awareness, initiative, and a sense of responsibility, as well as to foster a healthy attitude towards practical work - in other words, to try to develop the individual qualities demanded of a competent extension worker in the field.

The majority of the students entered the College with School Certificate qualifications : ideally, passes in English, mathematics and science, though at this period of acute middle-level manpower shortage, some students entered with passes completely irrelevant to their training. This was considered to be of more benefit to the country than having empty places at the College, and it was left to the College to be realistic about the situation and to do the best it could with the material available.

In a different category were another group of students who were in-service entrants selected by their Government departments on the strength of their several years of service in the field. The majority had received only junior secondary school education, followed by Farm Institute training. They started with the twin disadvantages of (a) being below the academic level of the majority, and (b) having been out of touch with classroom learning for several years. Nevertheless, some of these students were amongst the most promising at the College, and most of them worked hard to overcome their academic shortcomings. Such shortcomings were often compensated for by their interest and aptitude in practical work. It was not surprising that their departments were loathe to spare them for two years, but it was a wise political decision which gave them this opportunity.

Before going on to applied work in their various specialisms, all students undertook "foundation work" in their first year, and this was a vital part of the curriculum. Its aims could be listed as follows :-

(i) To repair omissions and shortcomings in entry standards by the strengthening of English, mathematics and science. It was by no means unknown to encounter a would-be agricultural diplomate with no school science!

(ii) The imparting of basic technical knowledge relevant to the specialist course concerned. Sometimes two or three courses came together for a subject concerning them all, such as soil science, engineering, building construction, and conservation.

(iii) To prepare these future Technical Officers to run a Government station and control subordinate staff. Relevant "common core" subjects would be Government structure and procedures, extension methods, office management, and records and accounts. (Those taking the Agricultural Commerce course would eventually be concerned with finance, marketing, and co-operative management, and would therefore study these subjects in much greater depth).

(iv) To broaden students' outlook to prepare them for participation in the country's ambitious development programme. Studies were made of the economic and social background of the country, together with an overview of natural resources as a whole, so as to give a total picture of the rural development programme. Each week an individual student would give a lecturette, and this would be followed by a staff/student discussion period, valuable not only for its content but also for the practice afforded in English oral expression.

(v) The teaching of practical skills necessary for a balanced training in any technical subject. (It is almost impossible to obtain a year's pre-College practical experience as in the more advanced countries where farms, lending themselves to practical training, are more highly developed).

Much of this instruction was time-tabled as Group Activities, and throughout the course occupied about one-third of the time with students' practical aptitude being assessed in proportion.

Eight students would be assigned to a group and a session, under the guidance of a lecturer or a practical instructor, would last for two hours. Groups would rotate around various projects with a view to mastering a wide variety of skills, many of them of a manual nature. Such sessions were regarded as a corallary to lectures and not separate from them. An example of some of the items included were farm walks, crop and livestock demonstrations, field work, practical craft work, engineering of various kinds, workshop practice, driving instruction, building construction, technical drawing, field surveying, laboratory work, records, accounts and costings, extension methods, report-writing, preparation of visual aids, specialist project work, and for the girl students: gardening, looking after small livestock, furniture making, and all the various aspects of homecraft.

Students also undertook routine practical work, appropriate to their course, on a rota basis outside the normal study day. This was on the same lines as that discussed under the heading of Farm Institutes, except that it was more sophisticated and offered greater variety, which was necessary because of the multi-purpose nature of the College.

To make all these group and individual projects possible, it was necessary to establish a highly intensive and diversified teaching farm of several hundred acres.

The teaching farm included a wide variety of crops and livestock, pastures both natural and reseeded, horticultural crops, orchards, irrigation, a wide range of simple functional farm buildings which the students helped to erect, a variety of mechanical equipment and a substantial workshop allowing space for instructing groups of students, a demonstration arena particularly suitable for handling livestock, a "plant library" comprising small observation plots of different crops from different parts of the country, a further lay-out of demonstration plots capable of providing teaching aids for agricultural science, a forestry plantation, a fish pond, a weather station, and experimental plots laid out in conjunction with the local Research Station, the idea being to show students exactly what is involved in experimental and research work and in seed production associated with plant breeding.

The management procedure adopted was that each lecturer played an active part in the management and policy-making of the enterprises on the teaching farm with which his teaching was concerned, and that co-ordination was in the hands of a "Farm Director and Organiser of Practical Classes" - a senior member of staff, who would call regular planning meetings of the various interested parties.

A criticism frequently levelled at the College's teaching farm was that, as a highly-intensive heavily-capitalised 700-acre mechanised farm, it could not possibly reflect what the student would find in the rural areas after qualifying and becoming an extension worker, and therefore it was presenting a totally unrealistic picture likely to mislead and confuse the student. It has to be remembered that the farm is to the agricultural instructor what the laboratory is to the science lecturer. Also, that it is important to look ahead and not to concentrate training on techniques and processes which will be outdated in ten years' time. Nevertheless, it was considered vital that, on no account, should realism be sacrificed, and for this reason a 20-acre smallholding was established in an effort to simulate conditions likely to be found on a peasant holding in a progressive rural area. The farmhouse and its surroundings became the venue for much of the women students' practical instruction. A Women's Club, organised for wives of workers at the College, also met there weekly.

After the first year, greater emphasis was placed on project work, case studies, and individual assignments, all based on problems which the student could be expected to meet in the field - problems needing to be sorted out in a detailed way using powers of judgment, the capacity to make decisions, and the development of a constructive approach towards finding a solution. The practical element of the course continued to occupy about one third of the teaching time.

Student Union activities, including sport and a wide variety of visiting speakers, were encouraged in every possible way. Many students, the products of mission schools, had a strong religious background. Sunday services were arranged at the College, and as far as possible, these were conducted on ecumenical lines.

As regards assessment, it had been the hope from the outset that the neighbouring University would appoint external examiners and thus underwrite the College awards in the form of a National Diploma. Continuous assessment was introduced in the form of weekly written tests or essays, and, periodically, practical aptitude tests were conducted on the teaching farm.

So far as the overall running of the College was concerned, two great advantages were enjoyed. One: the Principal was directly responsible to an enthusiastic, enlightened and well-informed multiracial College Council. Two: instead of having to endure a constant state of rivalry between Ministries who considered themselves as having a direct interest in the College's affairs, (they were, of course, continuously consulted about the technical content of the curricula), the College maintained its links with Government through the Directorate of Manpower and Training.

This is but one concept of an Agricultural College, and one which uses the term "agriculture" in the broadest sense. There are many other concepts appropriate to the needs of a developing country. Hayden (1965 : Vol I : 193) describes one of them. "Diploma-granting Colleges with a rural and applied bias in country areas could solve a large number of training problems and assist in the essential and very difficult task of distributing trained manpower throughout the countryside. This is an attractive picture - the rural education base, a combination of Cambridgeshire village college, Danish folk high school, and farm institute. It is also a very expensive one, since it would involve the provision of residential accommodation and a very expensive staff/student ratio as a large number of skills would have to be taught to small groups of students".

Given reasonable finance and, perhaps most difficult of all, a keen, imaginative and effective staff, an Agricultural College, more so than a University Department of Agriculture, would appear to lend itself to innovation.

VIII - AGRICULTURAL EDUCATION AT THE UNIVERSITIES

The proportion of students studying agriculture at universities in developing countries is usually alarmingly low. It is worth mentioning that where a system of education is not adjusted to the needs of national growth, what frequently happens is that there is an unfavourable education-growth ratio which adds to the "educated unemployed" problem, so often a feature of so many developing countries. Seldom is this the case where agricultural graduates are concerned.

Whilst universities continue to produce an over-supply of "generalists", the development of Faculties of Agriculture should act as centres of training and research, capable of evidencing the concern of the university with agriculture as a paramount factor in the overall growth of the country.

Many Universities offer services which are ineffective because of the highly theoretical, conceptual, even abstruse nature of the teaching and the research, neither of which may be related to developmental problems to the extent thought desirable. Instead, they may be, and often are, largely divorced from the life and problems of the workers in the countryside and the Governments which have to formulate policy.

What is needed is a supply of graduates of high quality with a sense of vocation, prepared to serve wherever they are sent, and capable of understanding the milieu in which they are working.

In the normal course of events, a developing country will have at least one University, and as part of that University there will be a Faculty of Agriculture, which should, if the politicians' priorities are to mean anything, be a flourishing Faculty. (This is perhaps asking a lot considering the heterogeneous mess many Faculties of Agriculture are perpetuating in even some of the most advanced countries!).

The Dean should be blessed with an aura of dignity and prestige - "charisma" is perhaps the right word - which will help him to overcome ceaseless attempts by his professional colleagues to treat him, even in Academic Senate, as a bit of a joke, or as a poor relation, tolerated but not fully understood!

There can be a number of reasons why this particular image is so widespread. One is that agriculture has a strong element of practical field experience ingrained in it, (the bucolic cabbage, cockerels and cow manure syndrome!), and, as such, is inevitably somewhat alienated from other Faculties within the "ivory towers".

This is not to say that agriculture is always right and all the other disciplines wrong. If agriculture is out on a limb, it is very often because of the Dean's philistine attitude towards the arts, humanities and social sciences, which helps to give an overall impression that agriculturalists everywhere intend to inevitably veer more towards the mundane than the cultural. It is vital for staff and students alike not to see themselves as second-class citizens.

Perhaps, ideally, the Dean should be a general agriculturalist leading a team of botanists, microbiologists, geneticists, biochemists, parasitologists, economists, engineers and the like, even if most of them have highly specialist qualifications more impressive than those of the Dean himself.

One of the Dean's main responsibilities is perpetually to keep in mind, and pass on to his subordinates, the concept of a Government and people who have decided that their major efforts must be directed towards the development of the country's rural areas, and that rural development should essentially aim at raising the economic, social and cultural levels of the rural population.

He must ensure that, from the outset, the student develops a realistic approach to the philosophy and mechanics of the co-operative movement; constraints on the productivity of subsistence farmers; the nature and problems of extension work and community development; the importance of incentives where an improvement in rural welfare and agricultural development is concerned; the role of the business industry in rural reconstruction; the role of crafts, small industries and village markets; the introduction of credit facilities including an understanding of local social values with respect to borrowing and to the repayment of loans; comprehensive studies of land settlement schemes; the effect of education on rural development; the encouragement of total rural community endeavour rather than a piecemeal approach with the various enterprises functionally unconnected.

"It is by combining educators, sociologists, economists and statisticians that we are most likely to arrive at a set of practical principles for an educational system which ties in with the economic and social objectives for growth". (Malassis, 1966 : 10).

Certainly the design and implementation of a University curriculum in agriculture poses its problems. Subjects are taught, in the main, by specialists, many of whom have achieved notoriety from their research attributes rather than their teaching acumen.

From the students' point-of-view, a bewildering patchwork of specialist knowledge may be a likely end-product rather than a coherent picture of a rural society with its inter-related human and husbandry problems.

A liberalising of the curriculum goes some way towards evolving a more balanced course. Professor Wood has this to say of the University of New South Wales' General Studies programme for all students of science and technology. "The aim of the General Studies programme is to broaden the education of a student by introducing him to some fields of knowledge which he might not otherwise enter, in order to develop him as a better informed individual who is able to play an intelligent part in the affairs of the community". (This is a passage taken from the Introduction to the General Studies Handbook of 1969).

Clearly there is a strong case for including in greater depth the non-vocational subjects recommended for Agricultural Colleges in the previous chapter. Extension methods, research methods and training methods could be offered as electives. An inter-disciplinary course such as "Man in Society" might well be mandatory. Few would argue against Rural Sociology being a "must". A strong case could also be made for Rural Psychology, especially since the immemorial rhythm of rural life must at all times be heeded and understood.

This leaves us with the vexed question of practical work. Is it any less important than at diploma or certificate level? I think not. In this context comes an interesting F.A.O. recommendation. "As a general rule, candidates should be accepted in Government service, or provided with facilities for higher education, only after helping for a minimum period in the rural renascence of the country. This, moreover, would be a source of encouragement to field-level workers". (F.A.O. Africa Survey, 1962 : 134).

Routine practical work might have to be arranged during vacation periods, and here the University farm might be called upon to provide certain facilities lacking in the ordinary farming community. Poor University farm - such multiplicity of function! It is usually required to cater for some practical instruction, the provision of teaching aids, supply amenities for highly specialised research work, and serve as a demonstration farm. No wonder that for the uninitiated onlooker it often appears as a "meaningless hotch-potch of nothingness"! A highly competent Farm Manager, with an unswerving sense of proportion, plus the demonstration farm as a separate unit, are the only solutions which come readily to mind. In speaking of the University farm, it is worth emphasising that every effort should be made to avoid costly duplication of research projects between the University's Faculty of Agriculture and the Government's Ministry of Agriculture.

Finally, a word about the possibility of establishing a Department of Agricultural Education at University level. Besides participating in certain aspects of teacher, instructor and lecturer training, this Department would contain a special Curriculum Development Unit charged with the preparation of teaching materials at all levels, including illustrated texts, film-strips and video-tapes of "practical classes" in agricultural skills. An alternative title for this Department might be the "Institute of Agricultural Training". It would also be expected to conduct research into training methods, probably from satellite centres in the provinces.

IX - ADULT EDUCATION IN RURAL AREAS

Adult education and training are vital elements in any programme of rural development. Some educational planners would go so far as to suggest that where a developing country is operating on a stringent budget, there may be virtue in slowing down the expansion of primary education, at least temporarily, and concentrating the maximum of energy and resources on providing agricultural education for the adult population.

"Adult education in rural areas aims simultaneously at reducing illiteracy; alleviating the inadequacies arising from the fact that a great many peasants quit school without completing the primary course; providing "after-care" for the new literates; contributing to their human betterment, providing them with occupational training and information; by arranging courses and providing guidance through extension services.

"There is little doubt that, with its different forms duly co-ordinated, adult education should play an important part in the evolution of the developing countries' rural communities." (Malassis, 1966 : 30).

"Adult education, with emphasis on literacy, should help to make the school education of children more effective. All the information we have suggests that the children of illiterate parents tend to fall behind in scholastic achievement, and that they may easily lapse into illiteracy". (Myrdal, 1970 : 178).

It must be acknowledged that literacy is needed for acquiring higher skills in all occupations, and that agriculture is certainly no exception.

It is worthy of note that when a country becomes Communist, a vigorous campaign is usually waged to make the whole people literate within a few years.

In sharp contrast, one might question the missed opportunities in a democratic country such as India, where the unemployed graduates could surely be mobilised for a far-reaching campaign of rural teaching as happened in Russia? It appears that a loss of status, real or imagined, on the part of the graduate is one of the inhibiting factors.

In much the same way, in so many developing countries, the rural schoolteacher is often a reluctant member of the community and would rather be practising his skills in an urban setting. Even the village extension worker, under-estimating the importance of his offering, often shows a disappointing degree of motivation. In such

a context, and in purely materialistic terms, rabid nationalism appears to achieve the more spectacular results. It is unfortunate that, in some circumstances, democracy can become synonymous with muddle and half-hearted and wasted effort.

This note of pessimism, (included in this discourse as a warning against complacency) is far from being shared by some planners, as evidenced by an International Labour Organisation paper which is altogether more comforting. "The principles of liberal planning, as they are spreading over the world today, seem to be based essentially on the need for granting each citizen a decent standard of living by developing to the utmost the existing or potential resources of the nation.

".... The desire of the village for development, which is seen in the establishment of a moral drive towards development, and the assistance of the Government, which, working through the three basic technicians, (the agricultural assistant, the schoolteacher, and the health officer), gradually instils the elements of the new life into the village.

".... There are powerful aspirations among the village inhabitants, especially those of the younger generations, to establish unimpeded relations with the life of the nation, and the modern independence movements have accelerated the trend. There is also the eager desire for industrial products of the villagers, who are no longer willing to live as their ancestors lived." (Fauchon, 1964 : 4).

(In the light of experience, not all these statements, it must be added, would be accepted in their entirety by all rural planners and development educationists).

It is imperative that agricultural institutions of all kinds, which have been discussed in previous chapters, are directly related to the needs of practising farmers at the grass-roots level. "It is possible to conceive", continues Fauchon, "a system of agricultural advisers, research institutes and various other establishments that would have no relation with the farmer. The conception, which has unfortunately been acted on many times, results in practice in a negligible increase in agricultural production, and therefore in national income, while subjecting the country to the burden of heavy charges of every kind ..... There can be no development in the national economy without agricultural development ..... National planning starts at the village level."

Ideally, the development of programmes of adult education and vocational training, geared to the specific needs of the farmer, should help to raise his standard of living. Once he is in a better position to improve his income, he and his family should be less tempted to depart for urban areas.

At this point, it seems appropriate to enumerate the various services which it would be reasonable for a Government to make directly available to the farmer and his family as an important feature of their rural development programme.

(1) The village school should, ideally, become the centre of the community, with the teacher as an important member of any community development team. If he assists in conducting adult literacy classes outside normal school hours, he should be remunerated accordingly, and this might well prove to be an added incentive when it comes to keeping him in a remote rural area.

(2) The farmer should be able to benefit from the regular services of a competent agricultural extension worker capable of instilling confidence into the local farming community. The same would apply to settlement officers and other Government agents concerned with community development projects.

(3) Vocational training centres should provide a service for farmers of the present as well as the farmers of the future. They should be geared to arranging regular residential courses of about one week's duration to be attended by peasant farmers from neighbouring villages. The courses should be of an essentially practical character and deal with new developments and working methods.

Techniques need to be employed which make it possible to give the farmer mass training to augment his individual contact with the local Agricultural Assistant. This would call for the use of such training aids as radio, television (in the comparatively rare instances where this is at present possible), slides, film-strips, mobile cinema units, discussion groups, demonstration plots, and simple illustrated booklets, bulletins, and news-letters for the literate.

(4) If adult education is taken to mean a service provided for those who have left school, or had no schooling at all, it must also be prepared to work with the youths who are the farmers of the future. Well-run Young Farmers' Clubs, or their equivalent, can perform a useful function both technically and socially. Here again, leadership is at a premium, and once more the community looks to the village schoolteacher, the local extension worker, community development workers and perhaps local religious institutions for ideas, practical help, and day-to-day guidance.

(5) Activities other than those catering specifically for the peasant farmer need to be included. "The prosperity of a village will be seen through the development within the village of non-agricultural rural activities, including repair and maintenance work by local

craftsmen, electrification, the provision of water supplies, the improvement of roads, irrigation canals and rural housing, the establishment of schools and health centres and the development of trade. In practice, the development of these non-agricultural rural activities is closely linked with the opportunities that the village has of obtaining supplementary services for satisfying its demand for consumer goods or long-term investments." (Fauchon, 1964: 5).

(6) Despite the inhibitions of tradition, the importance of the woman's role at village level must not be overlooked.

"The modernisation of subsistence farming is a fundamental factor in the improvement of economic well-being and women can play a decisive part in the amelioration of food growing, diatetic balance, health and sanitation, housing, village organisation and community life. We therefore need to develop the teaching of rural domestic economy and to train the female cadres needed for the improvement of living conditions. However, given the role of women in agricultural operations, it is also essential that they should be given an education bearing upon the problems of rural development and be fully awakened to the important part which they can play in that development." (Malassis, 1966 : 34).

In most developing countries, the education of girls lags far behind that of boys. The reasons for this go deep into social attitudes and beliefs. It will be impossible for such communities to develop through their own initiative if the women stand aside or are left aside. In the whole range of national effort, they have an indispensable part to play. Provision should be made for their particular needs at all levels of agricultural education.

This is perhaps a long-term concept. In the short-run, Women's Clubs can bring considerable benefits to village life provided the necessary experience and expertise can be found to ensure the viability of such projects. The provision of trained instructors presents a very real problem. As a short-term measure, the main solution appears to lie with "crash training' programmes for girls who have shown reasonable academic prowess at least up to, and including, junior secondary school. Their efforts could then usefully be harnessed as peripatetic instructors and demonstrators, travelling from village to village in a prescribed area, attending the routine meetings of the Women's Clubs and visiting some of the members in their homes.

(7) Leadership can well account for the differences between the success and failure of any community development project, and attempts to up-date farming methods, (in the broadest sense), are no exception. Improbable though, under certain circumstances, this may sound, successful socio-vocational courses have been run for local councillors and village elders, and, indirectly, the results have been quite impressive.

It is perhaps worth quoting an example of inspired leadership at a higher level - in fact, at the very top of the political ladder. In the chapter dealing with Agricultural Colleges, one particular institution was described in some detail. This College was privileged to witness and participate in a very interesting innovation. The President and his Cabinet decided they would each learn how to drive a tractor and operate a plough. On one afternoon each week, for a period of several weeks, they would leave their numerous other duties and come out to the College, don a suit of overalls, and spend at least two hours receiving individual instruction. They mostly became very proficient and appeared to greatly enjoy the experience. The rationale behind what might at first appear as a somewhat bizarre exercise, was that, in the efforts to encourage rural reconstruction to the very limit, they would visit a remote rural community, and instead of making a policy speech about the need to up-date the agricultural industry they would jump on a tractor, strategically placed at their disposal, and show the villagers what they should be doing, and how it should be done. This bold approach, to my mind, epitomises the whole spirit in which "education for rural development" can best be tackled. Half-an-hour of demonstration such as this might well be worth an archive full of Government memoranda and years of playing host to visiting "experts"!

X - TRAINING OF TEACHERS

A recurrent theme throughout these chapters has been the assertion that, given the most meaningful and realistic education and training programmes which those with experience, imagination and foresight can devise, in the final analysis no real achievement is possible without the necessary cadre of trained and motivated teachers, instructors, and demonstrators at the various levels of the hierarchical structure.

University graduates will largely be taught by those with postgraduate qualifications. Diplomates will be taught by graduates. Those taking certificate courses will be taught by diplomates. Those who attend vocational training centres will receive much of their instruction from those who possess Farm Institute certificates. At the school level, the teacher will ideally have been trained in teaching methods, at however lowly a level. He must also have a working knowledge of the total agricultural scene, if he is expected to apply a rural bias to his teaching.

We are, in effect, dealing with two broad categories of contributors. First, there are the trained agriculturalists who should be adequately versed in the rudiments of teaching, and second, the trained teacher who should be familiar with the rudiments of rural sociology and agricultural techniques. Whichever category we are dealing with, the "trainers of trainers" are seen as the key to any "education for rural development" programme. This is easy to say, but infinitely more difficult to achieve in practice.

"Educational systems in heavily rural countries face the perennial human problem of getting enough qualified teachers to staff the schools of rural areas where they are urgently needed, but where the rural life holds little appeal for teachers; so little, in fact, that the best teachers tend to congregate in the cities, while the education of rural youth is left in the hands of inferior teachers". (Coombs, 1968 : 44).

"Improved teacher training would assume a number of things difficult to accomplish rapidly in a poor country : better school preparation before entering the training schools, often a longer period of training, and, above all, a radical reform of their curricula, and, indeed, the whole spirit in which they operate."
(Myrdal, 1970 : 187).

Taking first the case of the rural schoolteacher, various training policies are possible:

(1) At the highest level, namely that of the graduate, (a relatively rare entrant to the profession, especially in the rural sector), a three or four-year course in an Agricultural Education Department, (if such existed), in a University would probably be ideal. Such graduates, subsequent to appropriate classroom experience, should be sufficiently mindful of the needs of a rural community to make useful administrators, planners, inspectors and curriculum advisers.

(2) For those with an ordinary School Certificate, an interesting possibility would be enrolment in an Agricultural College where this is a multi-discipline establishment, and where Rural Education could easily be included as one of the three-year options.

(3) The normal process of teacher-training, but with a strong orientation towards rural studies. This could be applied in varying concentrations at all levels of teacher training. It is important to encourage close relationships between Agricultural Colleges and Farm Institutes on the one hand, and Teachers' Colleges on the other. If they were to be located adjacently, the Teachers' College could make use of the teaching and demonstration farms of their agricultural neighbours, and there could also be a certain interchange of teaching staff to the mutual benefit of both establishments.

(4) Special in-service training courses for established teachers, aimed at creating on the part of the teachers a new excitement concerning agriculture and a realistic appraisal of its potential. Such courses could be held at either agricultural institutions or at Teachers' Colleges.

Moving on to the case of the teachers of vocational agricultural, again various training policies are possible:

(1) The higher echelons would undoubtedly profit from the activities of an Agricultural Education Department at University level, and they would be earmarked as the future leaders and policy-makers in the vocational training field. (In many countries, this would make a refreshing change from the existing arrangement where top decisions are made by administrators with no first-hand experience whatsoever of agricultural education; it just happens to be in their portfolio!).

(2) There is no reason why Agricultural Training should not be included as a diploma course at a multi-purpose Agricultural College in the same way as is suggested above for Rural Education.

(3) Short in-service courses for teachers of vocational agriculture who have, as happens in so many cases, been transferred to training duties from field service.

(4) Courses on teaching techniques for those who have decided to make vocational training their career. Such courses would be taken "end-on" to the basic agricultural training, and would obviously vary in length and depth of content according to academic level - for example, a University graduate taking up vocational training would probably embark upon a year's Diploma in Education, in much the same way as a graduate training to become a schoolteacher. On the other hand, a candidate with a certificate from a Farm Institute would probably undertake a simplified three months' course. I would consider the ideal would be for such training to be located at a Teachers' College, suitably staffed and equipped to provide this service in addition to its normal functions.

One or two ideas come to mind which apply equally to rural schoolteachers and vocational trainers:

(1) Training the educators and trainers is only one aspect of preparing them for their role in their country's rural development programme. The need for a Curriculum Development Unit has already been stated when discussing the contribution of the Universities. It should be capable of steadily feeding the teachers and trainers with a variety of ideas, some of them the product of the experiences of others in the same field, possibly even in other countries. The Unit should offer a continuous supply of teaching materials including audio-visual aids, bulletins and periodic manuals, as well as encouraging the production of suitable text-books. It should arrange regular conferences and seminars, and perhaps even arrange exchange visits. It does not necessarily have to be University-based just so long as its services can be made available to all those who need them. There are countries where such a unit exists as one of the limbs of the Ministry of Education, but it is to be hoped that those undertaking a teaching role in the employ of the Ministry of Agriculture could make equal use of their facilities.

(2) There is often a case for the involvement of a full-time agriculturalist at certain Teachers' Colleges, and, conversely, a full-time educationist at some agricultural institutions, especially if he understands not only training techniques, but extension skills as well.

(3) Refresher courses are a "must". They can be organised centrally by the Curriculum Development Unit, or they can be incorporated into the regular training programme of different institutes at different levels. Their concern is with up-dating techniques, whether these are applied to content or to methodology. Training must be kept up-to-date, otherwise there is the constant threat that teachers will resist change with which they are not familiar, with the result that their efforts become ineffective.

(4) Teacher morale in the more remote rural areas cannot be taken for granted, even though teachers are paid at a considerably higher level than the national per capita income. (In the U.S.A., teachers salaries are 1½ times more than the national per capita income; in Nigeria the figure is 7). Many teachers, (and I use the word "teacher" in the broadest sense) would prefer an urban posting, despite their almost certain involvement as a key member of the local rural development team. It has been suggested that certain fringe benefits might be made available to the rural teacher, such as a salary differential for those serving out in "the bush". (There are certain countries where a spell of country service is an essential pre-requisite for promotion). Above-average housing always helps; it adds to both comfort and prestige. Bursaries for the education of the teachers' children have also been suggested. These would enable them to leave the village to continue their secondary, and perhaps even tertiary, education. No doubt there are many more ideas which would help to stabilise the situation.

No-one in rural areas expects to attract the intellectual cream of the profession, but it is important that they get their fair share of competency, otherwise the rural areas are likely to become steadily more disadvantaged, especially as industrial areas develop.

A final word about the extension worker, who, like the teacher, must be of sufficient calibre to analyse and comprehend a village community in all its aspects and be trained in the techniques of communication. Extension workers are expected to become co-instigators of socio-economic change, on the possibilities of which they need to be fully informed. They must hold sufficient meetings and demonstrations, and pay sufficient farm visits, so that they are over the minimum below which the efficiency of agricultural extension work is threatened.

"Agricultural progress involves successively discovery, testing, demonstration and adoption on a practical scale by farming pioneers, and dissemination of the new ideas within the rural community". (Malassis, 1966 : 26).

XI - RECOMMENDATIONS

Most of the recommendations are made in the individual chapters, but there are a few general ones worthy of mention by way of a conclusion to this paper.

(1) The economics of agricultural production are a highlight of most development plans. It is imperative to change from a subsistence to a cash economy, and to increase agricultural output to the point where the export of produce becomes possible, so that its earnings make industrialisation and modernisation a reality. If this calls for innovation, then innovation there must be, and rural education is no exception.

(2) Innovation does not mean a sudden explosion of new ideas by ephemeral enthusiasts and visiting experts. It should be gentle rather than volcanic in its introduction. Under certain circumstances, pilot schemes have much to commend them.

(3) What is needed is a comprehensive rural development policy aimed at raising the standards of living of the country people through increased and diversified economic activity. This implies a greater allocation of resources than is at present the case. Rural development planning should comprise the establishment of rural towns, roads, transportation,communications, banking and credit facilities, marketing and commercial services, rural industries, and health, education and social services. Therefore, it is clear that the strategy of development must be an integrated, concerted approach by all the parties concerned. Education and training can only make its maximum contribution in an overall policy of this kind.

(4) If rural reconstruction is to concern the development of the total village community then spheres of Ministry interest are bound to overlap. Co-ordination is essential : pettiness, jealousy and stubbornness have rendered many a worthwhile project stillborn. Curiously enough, this unnecessary wastage always seems worst in matters concerned with training, perhaps because so few Ministry officials have had direct experience in this field. I would recommend the formation of a high-level Agricultural Education Council under the chairmanship of a senior member of the Office of the President (or Prime Minister). The Council would have executive powers and would stimulate and co-ordinate training requirements at all levels. The Executive Secretary would need to be an experienced agricultural educationist.

(5) If the function of the Agricultural Education Council is to be executive, then it needs support from a body which is both academic and advisory, and this is where I see one of the important roles of the University Department of Agricultural Education to be, especially if it is supported by a really viable Curriculum Development Unit, as well as being able to carry out meaningful and practical research projects in agricultural education. These would include most of the "pilot schemes" mentioned in (2).

(6) There is almost certain to be a critical manpower situation, especially where training is concerned. Manpower planning may be considered a luxury in an advanced economy, but in a developing country it is a matter of dire necessity.

(7) In the final analysis, a key factor is the enterprise and the fortitude of the rural teachers, trainers and extension workers. If their efforts represent the weak link in the chain, no development programme, however well-conceived, is likely to become fully viable. It would be well worthwhile carrying out an investigation into the status and role of these rural practitioners, so that everything reasonably possible can be done to raise and to maintain their morale - ideally, to the point where they no longer yearned for the bright lights of the city, but were able to apply themselves wholeheartedly to helping in the awakening of the countryside.

(8) It is important that those concerned with agricultural education preserve a sense of proportion instead of being torn between the two extremes of doubt and pessimism on the one hand, and naive optimism on the other.

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